

REMARKS

Reconsideration is respectfully requested.

In this Amendment, applicant has amended claims 21, 28 and 29 and cancelled claims 11-20, 27 and 31-40 from further consideration in this application. Applicant is not conceding that the subject matter encompassed by claims 11-20, 21, 27-29 and 31-40 prior to this Amendment is not patentable over the art cited by the Office. Claims 21, 28 and 29 were amended and Claims 11-20, 27 and 31-40 were cancelled in this Amendment solely to facilitate expeditious prosecution the application. Applicant respectfully reserves the right to pursue claims, including the subject matter encompassed by claims 11-20, 21, 27-29 and 31-40, as presented prior to this Amendment and additional claims in one or more continuing applications. The specification has also been amended to clarify certain language therein.

Telephonic Interview

Applicant's representative wishes to thank the Examiner for granting the telephonic interview conducted on March 17, 2008. During the interview, applicant's representative discussed the subject matter of independent claims 1 and 21 and the manner in which they distinguish over the prior art. Tentative agreement was reached, subject to further consideration and/or search, that the subject matter of claim 1 is patentably distinguishable over the Smith reference (US 2002/0197936) cited against claim 1 under 35 U.S.C. 102. Applicant also advised that claim 21 is patentably distinguishable over the Dakroub et al. reference (US 7113354) cited against claim 21 under 35 U.S.C. 102. The Yeh et al. reference (US 6930844) (newly-discovered by applicant and submitted in an accompanying IDS) was also discussed.

During the interview, a question arose as to whether restriction between the claim groups comprising claims 1-10 and 21-30 would be appropriate. Applicant has amended claim 21 to

incorporate the subject matter of claim 27 (directed to adjusting magnetic spacing as necessary to reflect transducing head wear), which should obviate any necessity to further restrict the application. Applicant would also suggest that the previous restriction requirement that resulted in the withdrawal of claims 8-9 and 29-30 is not appropriate insofar as these dependent claims simply recite techniques for determining transducer head wear (recited in the base claims), when the head is an MR read sensor.

Claim Rejections – 35 U.S.C. §102

Claims 1, 11, 20, 21, 22, 31 and 32 have all been rejected under 35 U.S.C. 102 as being anticipated by prior art. Applicant respectfully traverses. The test for anticipation under 35 U.S.C. § 102 requires is outlined in MPEP 2131, as follows:

“‘A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.’ *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).”

* * *

“‘The identical invention must be shown in as complete detail as is contained in the ... claim.’ *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipse dixit* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).”

In other words, an anticipation reference faces a two-prong requirement. First, the reference must disclose each element of the claim under consideration. *W.L. Gore & Assocs. v. Garlock*, 721 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983) (cert. denied, 469 U.S. 851 (1984)). Second, the reference may not disclose the claim elements in isolation -- they must be “arranged as in the claim.” *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 U.S.P.Q. 481, 485 (Fed. Cir. 1984). As part of the anticipation analysis, the

claim language must be read in light of the specification as it would be interpreted by one of ordinary skill in the art. In re Bond, 910 F.2d 83, 15 U.S.P.Q. 2d (Fed. Cir. 1990).

It is the Examiner's burden to establish *prima facie* anticipation. In re Piasecki, 223 U.S.P.Q. 785, 778 (Fed. Cir. 1984) ("As adapted to ex parte procedure, Graham is interpreted as continuing to place the 'burden of proof on the Patent Office which requires it to produce the factual basis for its rejection of an application under sections 102 and 103" (quoting In re Warner, 379 F.2d 1011, 154 U.S.P.Q. 173, 178 (CCPA 1967) (cert. denied 389 U.S. 1057 (1968))). As stated by the Board, "[i]t is by now well settled that the burden of establishing a *prima facie* case of anticipation resides with the Patent and Trademark Office." In re Skinner, 2, U.S.P.Q. 1788, 1788-89 (B.P.A.I. 1986). See also In re Oetiker, 997 F.2d 1443, 24 U.S.P.Q. 2d 1443 (Fed. Cir. 1982) ("If the examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of a patent.").

Claims 1, 11, and 20 were rejected under 35 U.S.C. 102 as being anticipated by Smith (US 2002/0197936). As previously advised, claims 11 and 20 have been canceled. With respect to claim 1, Smith cannot anticipate because it does not disclose the subject matter set forth in the clause that reads "adjusting the magnetic spacing change value as necessary to reflect transducing head wear." Paragraph 27 of Smith is cited as disclosing this subject matter. However, paragraph 27 is part of a discussion of Smith's Fig. 4, which discloses the process by which Smith's rear slider pad 54 is burnished during drive manufacture in order to aerodynamically profile the pad and reduce its height to achieve a desired slider fly height relative to a medium. Initially, the pad height is larger than needed and the method involves burnishing the pad while making repeated spacing measurements (e.g., using magnetic spacing between the slider's read or write transducers and the medium) until the final pad height is reached. If two magnetic spacing

measurements are made in Smith to provide a magnetic spacing change value, there is no further step of “adjusting the magnetic spacing change value as necessary to reflect transducing head wear,” as recited in the second paragraph of claim 1. As set forth in paragraphs [0027] and [0028] of Smith, none of the spacing measurements are adjusted. Rather, they are simply used to see how much more of the slider’s rear pad 54 needs to be removed as part of the burnishing process.

The subject matter of claim 1 is directed to a method in which is the accuracy of fly height measurements between a transducer and a medium is improved. Fly height is the actual physical separation between the body of a transducer and the medium. As described in the Background section of the present application, one way to determine changes in fly height is to measure the magnetic spacing between the medium and a sensor portion of the transducer, such as a read sensor, and determine the change in magnetic spacing relative to a reference measurement. The change in magnetic spacing can be determined using the Wallace Spacing Loss relationship. However, as stated on page 2, lines 16-20 of the specification (which discusses fly height measurement in the context of a tape head interacting with a tape medium), “the change in magnetic spacing determined by the Wallace Spacing Loss relationship will not indicate change in true fly height if the read sensor (or the write coil element) becomes recessed from the tape bearing surface.” This condition is shown in applicant’s Fig. 1B. As can be seen, the magnetic spacing measurement does not represent the true fly height of the transducer because the sensor portion of the transducer has recessed from the tape bearing surface due to wear. The subject matter of claim 1 is based on applicant’s recognition of this phenomenon. In particular, the second paragraph of claim 1 accounts for transducer head wear and adjusts the magnetic spacing change value accordingly. An example is given on page 16 of the specification

wherein the change in fly height ΔFH is determined to be the difference between the change in magnetic spacing ΔMS and the change in sensor recession ΔR (e.g., as measured by a change in stripe height) according to the relationship $\Delta FH = \Delta MS - \Delta R$. In tape drives, the fly height is ideally zero because the head should bear against the tape medium. However, a build up of debris on the tape medium can result in the fly height increasing to some positive value. At the same time, head wear can cause the sensor portion of the transducer to recess from the transducer's tape bearing surface. When a magnetic spacing measurement is made, it is important to know whether an increase in magnetic spacing is due to an actual change in fly height that may be caused by debris build or by sensor recession. The former can usually be corrected by cleaning the tape while the latter may require head replacement.

Smith does not disclose any method of adjusting magnetic spacing to account for transducer head wear in order to improve fly height measurement accuracy. As such, the reference cannot anticipate claim 1 under 35 U.S.C. 102. As discussed above, Smith simply uses magnetic spacing measurements as a way to monitor a burnishing process that removes slider pad material. Insofar as the burnishing process removes both sensor material and the surrounding material of the rear pad 54, there is no issue of the magnetic spacing measurement not being accurate due to the differentially recessing from the surrounding pad material. Smith takes magnetic spacing measurements “as is” and uses them to determine when the read pad 54 has reached its ideal manufacturing height so that the burnishing process may be terminated.

Claims 21, 22, 31 and 32 were rejected under 35 U.S.C. 102(e) as being anticipated by Dakroub et al. (U.S. 7,113,354). As previously advised, claims 31 and 32 have been canceled. With respect to claim 21, Dakroub et al. cannot anticipate because it does not disclose the subject matter set forth in the clause that reads “calculating a magnetic spacing change value from the

media noise.” The technique disclosed in Dakroube et al. can only detect fly height in the sense of determining from a white noise readback signal peak waveform that a head crash is imminent. See Fig. 3 and column 5, lines 10-19. Only a landing noise signature is determined. There is no calculation of a magnetic spacing change value from media noise.

Notwithstanding the foregoing, Applicant has amended claim 21 to incorporate the subject matter of claim 27 in order expedite prosecution by avoiding a potential restriction requirement. Claim 27 has been canceled and claims 28 and 29 have been amended to depend from claim 21.

Claim 22 cannot be anticipated by Dakroub et al. due to its dependency from claim 21. In addition, Claim 22 recites that “said media noise is generated by forming a substantially random pattern of magnetic domains on the recording medium using one of an A.C. erasure technique, a D.C. erasure technique or a bulk erasure technique.” Dakroube et al. contains no disclosure of using an erasure technique to form noise generating magnetic domains. The reference simply discusses using a nonrecorded portion of a medium.

Claim Rejections – 35 U.S.C. §103

Claims 2-7, 10, 12-17 23-28 and 33-38 have been rejected under 35 U.S.C. 103 as being obvious over prior art. Applicant respectfully traverses. Section 103 requires the issuance of a patent unless “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1734, 82 USPQ2d 1385, 1391 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior

art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966). See also *KSR*, 127 S.Ct. at 1734, 82 USPQ2d at 1391 (“While the sequence of these questions might be reordered in any particular case, the [Graham] factors continue to define the inquiry that controls.”)

The USPTO bears the initial burden of establishing that a claimed invention is *prima facie* obvious. *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). To establish a *prima facie* case of obviousness, the USPTO must satisfy three requirements. First, it must “identify a reason that would have prompted a person of ordinary skill in the relevant art to combine the elements in the way the claimed new invention does.” *KSR Int’l Co. v. Teleflex Inc.*, *supra*. Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the artisan at the time the invention was made. *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1209, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991). Third, the prior art reference or combination of references must teach or suggest all the limitations of the claims. *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

On October 10, 2007, the USPTO issued new examination guidelines for determining obviousness under 35 U.S.C. 103 in view of the *KSR* case. Federal Register, Vol. 72, No. 195, pages 57526-57535. The examination guidelines emphasize that “the focus when making a determination of obviousness should be on what a person of ordinary skill in the pertinent art would have known at the time of the invention, and on what such a person would have reasonably expected to have been able to do in view of that knowledge.” Fed. Reg., Vol. 72, No. 195 at page 57527. The examination guidelines point out that “[i]n certain circumstances, it may also be important to include explicit findings as to how a person of ordinary skill would have

understood prior art teachings, or what a person of ordinary skill would have known or could have done.”

Claims 2, 4-7, 12 and 14-17 have been rejected under 35 U.S.C. 103 as being unpatentable over Smith in view of Dakroub et al. As previously advised, claims 12 and 14-17 have been canceled.

Claims 2 and 4-7 should be allowable based on their dependence from claim 1, which is not anticipated by Smith for the reasons set forth above.

Claim 2 additionally recites that “said magnetic spacing change value is calculated from media noise sensed on the recording medium.” As we learned above, Dakroub et al. does not disclose calculating a magnetic spacing change value.

Claim 4 depends from claim 2 and additionally recites that “said magnetic spacing change value is calculated after decomposing said media noise into frequency components using a Fast Fourier Transform conversion process.” As stated, Dakroub et al. does not disclose calculating a magnetic spacing change value and thus would not have suggested the magnetic spacing change calculation set forth in claim 4. Moreover, the Office relies on “well known techniques” without presenting any evidence therefore. Pursuant to MPEP 2144.03, applicant challenges the factual assertions made in the Office Action regarding the “well known techniques” and requests either the citation of an appropriate prior art reference or a supporting affidavit on this subject.

Claim 5 depends from claim 2 and additionally recites that “said magnetic spacing change value is calculated after decomposing said media noise into frequency components using a spectrum analyzing process.” As stated, Dakroub et al. does not disclose calculating a magnetic spacing change value and thus would not have suggested the magnetic spacing change calculation set forth in claim 5. Moreover, the Office relies on “well known techniques” without

presenting any evidence therefore. Pursuant to MPEP 2144.03, applicant challenges the factual assertions made in the Office Action regarding the “well known techniques” and requests either the citation of an appropriate prior art reference or a supporting affidavit on this subject.

Claim 6 depends from claim 2 and additionally recites that “said magnetic spacing change value is calculated using at least two frequency components of said media noise.” As stated, Dakroub et al. does not disclose calculating a magnetic spacing change value and thus would not have suggested the magnetic spacing change calculation set forth in claim 6. Moreover, the Office relies on “well known techniques” without presenting any evidence therefore. Pursuant to MPEP 2144.03, applicant challenges the factual assertions made in the Office Action regarding the “well known techniques” and requests either the citation of an appropriate prior art reference or a supporting affidavit on this subject.

Claim 7 depends from claim 1 and additionally recites that “transducing head wear is determined by measuring transducing head signal amplitude after accounting for changes in amplitude due to conditions other than transducing head wear.” An example of such a condition discussed in applicant’s specification is temperature (which can affect readback signal amplitude). Smith measures transducing head wear to monitor a head burnishing process and thus is not concerned with conditions other than transducing head wear. Dakroub et al. measures signal amplitude in order to determine a waveform characteristic that indicates an impending head crash. In Smith, the head is already on the medium and thus head crashing is irrelevant. Moreover, claim 7 is directed to one way of measuring transducer head wear in the context of claim 1, which is directed to adjusting a magnetic spacing change value to account for head wear. As discussed above, Smith is not interested in adjusting a magnetic spacing change value to account for head wear.

Claims 3 and 13 have been rejected under 35 U.S.C. 103 as being unpatentable over Smith in view of Dakroub et al. and further in view of Abraham et al. (US 6,239,936). As previously advised, claim 13 has been canceled. Claim 3 should be allowable based on its dependence from claim 1, which is not anticipated by Smith for the reasons set forth above. In addition, claim 3 recites that “said media noise is processed so as to be substantially free of electronic power spectra noise generated by read channel circuitry associated with the transducing head.” Abraham et al. is directed to a “method and apparatus for calibrating a thermal response of an magnetoresistive (MR) element.” Column 3, lines 14-16. Column 4, lines 28-31 states that the disclosed technique “may be advantageously employed to survey the surface topography of a data storage disk and to accurately and reliably detect disk surface features and defects.” Column 4, lines 40-43 states that “[i]n accordance with an embodiment, the present invention obviates the traditional approach of using a magnetic signal induced in the MR element to analyze a disk surface.” Instead, as shown in Fig. 2 of Abraham et al., a thermal signal is used. Thus, when column 10, lines 35-42 mentions electronic noise compensation, it is referring to removing electronic noise from a thermal signal, not from a media noise signal as recited in claim 3. In particular, column 10, lines 35-42 states that [b]y time-averaging the thermal spacing signal, components such as electronic noise approach zero and can be separated from the component of thermal response induced by disk topography.”

Claim 10 has been rejected under 35 U.S.C. 103 as being unpatentable over Smith in view of Muranushi et al. (US 5,153,785). Claim 10 should be allowable based on its dependence from independent claim 1, which is not anticipated by Smith for the reasons set forth above.

Claims 23 and 33 have been rejected under 35 U.S.C. 103 as being unpatentable over Dakroub et al. in view of Abraham et al. As previously advised, claim 33 has been canceled.

Claim 23 should be allowable based on its dependence from claim 21, which is not anticipated by Dakroub et al. for the reasons set forth above. Moreover, Claim 23 recites that “said media noise is processed so as to be substantially free of electronic power spectra noise generated by read channel circuitry associated with the transducing head.” Abraham discloses removing electronic noise from a thermal signal not a media noise signal.

Claims 24-26 and 34-36 have been rejected under 35 U.S.C. 103 as being unpatentable over Dakroub et al. As previously advised, claims 34-36 have been canceled. Claims 24-27 should be allowable based on their dependence from claim 21, which is not anticipated by Dakroub et al. for the reasons set forth above. Claims 24-26 should be additionally allowable for the following additional reasons:

Claim 24 depends from claim 21 and additionally recites that “said magnetic spacing change value is calculated after decomposing said media noise into frequency components using a Fast Fourier Transform conversion process.” As stated, Dakroub et al. does not disclose calculating a magnetic spacing change value and thus would not have suggested the magnetic spacing change calculation set forth in claim 24. Moreover, the Office relies on “well known techniques” without presenting any evidence therefore. Pursuant to MPEP 2144.03, applicant challenges the factual assertions made in the Office Action regarding the “well known techniques” and requests either the citation of an appropriate prior art reference or a supporting affidavit on this subject.

Claim 25 depends from claim 21 and additionally recites that “said magnetic spacing change value is calculated after decomposing said media noise into frequency components using a spectrum analyzing process.” As stated, Dakroub et al. does not disclose calculating a magnetic spacing change value and thus would not have suggested the magnetic spacing change

calculation set forth in claim 25. Moreover, the Office relies on “well known techniques” without presenting any evidence therefore. Pursuant to MPEP 2144.03, applicant challenges the factual assertions made in the Office Action regarding the “well known techniques” and requests either the citation of an appropriate prior art reference or a supporting affidavit on this subject.

Claim 26 depends from claim 21 and additionally recites that “said magnetic spacing change value is calculated using at least two frequency components of said media noise.” As stated, Dakroub et al. does not disclose calculating a magnetic spacing change value and thus would not have suggested the magnetic spacing change calculation set forth in claim 26. Moreover, the Office relies on “well known techniques” without presenting any evidence therefore. Pursuant to MPEP 2144.03, applicant challenges the factual assertions made in the Office Action regarding the “well known techniques” and requests either the citation of an appropriate prior art reference or a supporting affidavit on this subject.

Claims 27, 28, 37 and 38 have been rejected under 35 U.S.C. as being unpatentable over Dakroub et al. in view of Smith. As previously advised, claims 27, 37 and 38 have been canceled. Claim 28 should be allowable based on its dependence from claim 21, which is not anticipated by Dakroub et al. for the reasons set forth above. Moreover, claim 21 now incorporates the subject matter of canceled claim 27, which recites “adjusting said magnetic spacing change value as necessary to reflect transducing head wear.” As discussed above in connection with claim 1, Smith does not disclose adjusting a magnetic spacing change value.

Claim 28 should be additionally allowable because it recites that “transducing head wear is determined by measuring transducing head signal amplitude after accounting for changes in amplitude due to conditions other than head wear.” As discussed above in connection with claim 7, an example of such a condition discussed in applicant’s specification is temperature (which

can affect readback signal amplitude). Smith measures transducing head wear to monitor a head burnishing process and thus is not concerned with conditions other than transducing head wear. Dakroub et al. measures signal amplitude in order to determine a waveform characteristic that indicates an impending head crash. In Smith, the head is already on the medium and thus head crashing is irrelevant. Moreover, claim 28 is directed to one way of measuring transducer head wear in the context of claim 27, which is directed to adjusting a magnetic spacing change value to account for head wear. As discussed above, Smith is not interested in adjusting a magnetic spacing change value to account for head wear.

For the foregoing reasons, Applicant respectfully requests that Notices of Allowability and Allowance be issued.

Respectfully submitted,

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